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"On Doppler's Principle in Connection with the Study of the Radial Velocities on the Sun," A. Cotton.

"On the Magnetic Separation of the Spectral Lines of Calcium and Strontium," B. E. Moore.

"On the Radiation of the Companion of Algol," Joel Stebbins.

"On Regularities in the Spectrum of Neon," Herbert Edmeston Watson.

"Application of the Interference Method to the Study of Nebulæ," Ch. Fabry and H. Buisson.

"Observations of Nova Lacertæ at the Yerkes Observatory," Edwin B. Frost.

"Photographic Determinations of Stellar Parallax made with the Yerkes Refractor." VI., Frank Schlesinger.

THE June issue of the *Journal of Comparative Neurology* contains the following articles:

"The Evolution of the Sympathetic Nervous System in Vertebrates," Albert Kuntz.

"The Olfactory Nerve and the Nervous Terminalis of Ameiurus," Charles Brookover and Theron S. Jackson.

"The Nervus Terminalis in Urodele Amphibia," Paul S. McKibben.

"Localization of the Motor Area in the Sheep's Brain by the Histological Method," Jessie L. King.

PRE-COLUMBIAN REFERENCES TO MAIZE IN PERSIAN LITERATURE

THAT maize is of American origin is no longer a disputed question, but the discussion of the possibility of its having been known in Europe and in the east before the discovery of America by Columbus is by no means closed.

There was much written on this subject in the first quarter of the nineteenth century, and one of the historical references to which much importance was attached is an alleged mention of *rous* by Mirkhond, a Persian historian of the fifteenth century (1433-1498). The authority for the existence of such mention by Mirkhond is Herbelot, an orientalist of note, who uses the word *rous* as synonymous with *blé de Turquie*, which was a name for maize in common use at the time.¹

¹ Harshberger, "Maize: A Botanical and Economic Study," University of Pennsylvania, Contributions from the Botanical Laboratory, Vol. 1,

Under the word *Rous*, in the "Bibliothèque orientale," Herbelot says (*italics ours*): "*Rous*. Name of the eighth son of Japhet, son of Noah, from whom Russia, which we now call Muscovy, has taken its name. Mirkhond wrote in the genealogy which he has given us of the Mogols, ancestors of Jenghiz Khan, that *Rous* was of a very different disposition from his brother *Khazar* . . . so that *Khazar* was obliged, in order to live in peace with his brother to yield to him all the islands of this great river (Volga) which empties into the Sea of *Khazar* which we call Caspian. *Rous* sowed in all these islands the wheat which we call *de Turquie* and which the Turks still call, to-day, in their language, by the name of *rous* and *boulgar*."²

Bonafous, in his monumental work on maize quotes the above and says (*italics ours*): "The celebrated orientalist, Herbelot, refers to a passage from Mirkhond, a Persian historian of the fifteenth century of which the translation, *if it is exact, would leave no doubt that maize was known in the Old World before the discovery of the New*."³ Bonafous proceeds to say, however, that after an examination of the text of Mirkhond, at the place p. 89; Browne, "Maize or Indian Corn," American Institute, Annual Report, Vol. 5, 1847, p. 412.

² "Rous. Nom du huitième fils de Japhet, fils de Noé, duquel la Russie, que nous appellons aujourd'hui Moscovie, a pris son nom. Mirkhond écrit, dans la généalogie qu'il nous a donnée des Mogols, ancêtres de Ginghizkhan, que *Rous* étoit d'une humeur bien opposée à celle de son frère *Khazar*, . . . en sorte que *Khazar* fut obligé, pour vivre en paix avec son frère, de lui céder toutes les isles de ce grand fleuve qui se décharge dans la mer de *Khazar*, que nous appellons Caspienne. *Rous* fit semer dans toutes ces isles le *bled* que nous appellons *de Turquie*, et que les Turcs appellent encore aujourd'hui en leur langue du nom de *rous* & *boulgar*." (Herbelot, "Bibliothèque orientale," 1777-78, Vol. 3, p. 137.)

³ "Le célèbre orientaliste d'Herbelot rapporte un passage de Mirkhond, historien persan du quinzième siècle, dont la version, *si elle est exacte, ne laisserait pas douter que le maïs n'était connu dans l'Ancien-monde avant la découverte du Nouveau*." (Bonafous, "Histoire naturelle du Maïs," 1836, p. 22.)

indicated by Herbelot, he finds nothing to justify the latter's statement in regard to *rous*, and adds, as he dismisses the subject, "Either this author must have drawn from some other source than that which he indicates, or a strange confusion must have prevailed among the notes which he had collected."⁴

This judgment of Bonafous' seems for the time to have closed the question, but the investigation of the subject of the origin of maize in connection with some bibliographical work being done in the Bureau of Plant Industry, of the United States Department of Agriculture, has revealed the fact that several scholars of note agree that Herbelot and others often ascribed to Mirkhond statements which were really taken from the writings of Khondemir⁵ (1475-1534).⁶

Khondemir wrote at almost the same time as Mirkhond, although he was his grandson,⁷ and his best known work, the *Khelassé-al-âkhbar*, is very nearly identical in subject matter with Mirkhond's *History of the world*, the *Rauzet-al-safa*. Reinaud says: "The *Khelassé-al-âkhbar* . . . which, however, is for the most part only an abridgment of the *Rauzet-al-safa*, composed by Mirkhond, has furnished Herbelot with a large part of his historic articles."⁸

"Ou cet auteur aura puisé à une autre source que celle qu'il indique, ou une étrange confusion se sera mise dans les notes qu'il avait rassemblées" (*loc. cit.*).

⁵ Various spelled, Khondemir, Khwand amir, Chuandamir.

⁶ Silvestre de Sacy, "*Mémoires sur diverses antiquités de la Perse*," p. xiii; Langlès, in "*Notices et extraits des manuscrits de la Bibliothèque nationale*," Vol. 5, 1799, p. 193; Audifret, in Michaud, "*Biographie universelle*," Vol. 29, 1821, p. 133.

⁷ Khondemir is often spoken of as the son of Mirkhond, but he himself says that Mirkhond was his maternal grandfather. (Rieu, "*Catalogue of the Persian Mss. in the British Museum*," 1879, Vol. 1, p. 96.)

⁸ "Le *Khelassé-al-âkhbar* . . . qui, du reste, n'est le plus souvent qu'un abrégé du *Rauzet-al-safa*, composé par Mirkhond, a fourni à d'Herbelot une grande partie de ses articles historiques."

The similarity of subject matter in the two works is shown by a comparison of the summaries of the two parts in which we are especially interested—part 9, of the *Khelassé-al-âkhbar*, and part 5, of the *Rauzet-al-safa*. Of the former Reinaud says, "The author goes back to Japhet. He undertakes to relate everything worthy of note that has happened in the northern countries of Asia, and then gives many details of the wars of Jenghiz Khan and of his descendants."⁹ Of part 5, of Mirkhond's *Rauzet-al-safa*, Jourdain says: "Introduction to the history of Jenghiz Khan, in which Mirkhond traces that of some Tartar and Mogol princes from Japhet, son of Noah, to this victorious Mogol."¹⁰

Having thus seen, first, that the two authors, Mirkhond and Khondemir, were often confused, and second, as a reason for the confusion, that the subject matter of the *Khelassé-al-âkhbar* of Khondemir and the *Rauzet-al-safa* of Mirkhond is, for the most part, the same, it seems reasonable to advance the conjecture that Herbelot drew his information from Khondemir rather than from Mirkhond, and that this probable error in crediting the quotation accounts for the failure of Bonafous to verify the reference.

The statement concerning maize ascribed to Mirkhond loses none of its value in the investigation of the early history of maize, if taken from the writings of Khondemir, so that an examination of his writings, especially part 9, of the *Khelassé-al-âkhbar*, becomes important. A copy of this work is in the (Reinaud, in Michaud, "*Biographie universelle*," Vol. 22, 1818, p. 378.)

⁹ "L'auteur remonte jusqu'à Japhet. Il s'attache à relever tout ce qui s'est passé de remarquable dans les contrées septentrionales de l'Asie, et fournit ensuite beaucoup de détails sur les guerres de Djenghiz-khan et de ses descendants." (Reinaud, in Michaud, "*Biographie universelle*," Vol. 22, 1818, p. 379.)

¹⁰ "Introduction à l'histoire de Djenghiz-khan, dans laquelle Mirkhond trace celle de quelques princes Tartares et Mogols, depuis Japhet, fils de Noé, jusqu'à ce conquérant Mogol." (Jourdain, in "*Notices et extraits des manuscrits de la Bibliothèque nationale*," Vol. 9, 1813, p. 135.)

Library of the British Museum,²¹ but we do not know of a copy in this country. We shall be glad to be informed if there is a copy in an American library.

MARY G. LACY

BUREAU OF PLANT INDUSTRY,
U. S. DEPARTMENT OF AGRICULTURE

TERRESTRIAL MAGNETISM

THE results of magnetic observations made by the Coast and Geodetic Survey between July 1, 1909, and June 30, 1910, have recently been printed at the Government Printing Office in Washington. The report is edited by R. L. Faris, Inspector of Magnetic Work; assistant, Coast and Geodetic Survey. The report includes the values of the three magnetic elements as measured during the fiscal year, at two hundred and thirty-two stations on land distributed through thirty-nine states and territories. Several other land stations were occupied and partial results are given for these. Of this number, seventy-five were "repeat" stations, nearly one third of the whole number. "The resulting values of annual change show that, as compared with 1905, west declination is increasing more rapidly in New England and the Middle States and east declination is increasing more rapidly in the western part of the country. The position of the line of no change is apparently about the same as in 1905." The year 1905 is doubtless referred to because to that year the last and most complete declination charts yet printed for the entire country were uniformly reduced. The results of a considerable number of observations at sea are given in this report. In connection with the land work, the continuous records of the magnetic observatories, five in number, were available, except for the time during which the instruments of the observatory at Baldwin, Kans., were being removed to Tucson, Ariz., the observatory at the former place being discontinued in October, 1909, and a new one established at the latter in November, 1909.

F. A. MOLBY

CORNELL UNIVERSITY

²¹ Rieu, "Catalogue of the Persian Mss. in the Library of the British Museum," 1879, Vol. 1, pp. 96-97.

SPECIAL ARTICLES

REDISCOVERY OF SOME CONRAD FORMS

T. A. CONRAD in "Description of Cretaceous and Tertiary Fossils," published in part two of the Report on the United States and Mexican Boundary Survey, describes and figures the following cretaceous forms collected by Arthur Schott, ascribing them to the localities given.

<i>Mactra texana</i> ,	Prairie between Laredo and Rio Grande City.
<i>Cardium congestum</i> ,	Devils River.
<i>Rostellaria? collina</i> ,	Between Devils River and the Pecos.
<i>Rostellaria? texana</i> ,	
<i>Natica collina</i> ,	
<i>Natica texana</i> ,	
<i>Buccinopsis parryi</i> ,	

The first-named locality is in the Eocene and at the others only rocks of Fredericksburg and Washita are exposed. These forms have not since been found in either locality named and I have not been able to find any record of their having been recognized, since the time of their description, anywhere else in this region, although, as will be shown later, one or two of them have been collected by other workers in this field.

In working over the collections made in January, 1909, by Messrs. W. F. Cummins and W. Kennedy along the Rio Grande below Eagle Pass, I found a number of fairly good specimens of each of the species named.

Our localities and collections are as follows:

Mouth of Cuevas Creek:

Rostellaria? (Volutomorpha) texana Con.

Cardium congestum Con.

One and one half miles above Las Isletas:

Mactra texana Con.

Pholadomya sp.

Buccinopsis parryi Con.

Rostellaria? (Volutomorpha) texana Con.

Etc.

Wash 1 m. above Las Isletas:

Sphenodiscus pleurisepa Con.

Ostrea cortex Con.

Mactra texana Con.